

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/013138

International filing date (day/month/year)
18.11.2004

Priority date (day/month/year)
05.12.2003

International Patent Classification (IPC) or both national classification and IPC
G03F7/031

Applicant
KODAK POLYCHROME GRAPHICS GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA220.

3. For further details, see notes to Form PCT/ISA220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Dupart, J.-M.

Telephone No. +31 70 340-3579



WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/EP2004/013138

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/013138

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-20
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US 2003/0186165 A

D2: DD 287 796 A

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-20 does not involve an inventive step in the sense of Article 33(3) PCT.

US 2003/0186165 A (D1), which is considered as the closest state of the art, discloses a radiation-sensitive composition for producing a lithographic printing plate precursor (see page 9, Table 2, example 8), which composition comprises:

- (a) a photopolymerizable compound (see component C in Table 2) with ethylenically unsaturated groups accessible to a free-radical polymerization, wherein the photopolymerizable compound has a molecular weight of 3,000 or less and can be obtained by reacting a diisocyanate (1 mole of hexamethylene diisocyanate) with (i) an ethylenically unsaturated compound with a hydroxy group (1 mole of 2-hydroxyethyl methacrylate), and at the same time (ii) a saturated organic compound with a NH group and an OH group (0.5 mole of 2-(2-hydroxyethyl)-piperidine),
 - (b) a sensitizer which absorbs radiation from the wavelength range of 250 to 450 nm of the electromagnetic spectrum (component G: 7-diethylamino-4-methylcoumarin);
 - (c) a coinitiator capable of forming free radicals together with the sensitizer (b) (component I: 2,2'-bis(2-chlorophenyl)-4,4',5,5'-tetraphenyl-1,2-bisimidazole);
 - (d) an alkali-soluble binder (component A: methylmethacrylate-methacrylic acid copolymer);
 - (e) a chain transfer agents (component J: 2-mercaptobenzoxazole);
 - (f) a surfactant (component K: Edaplan LA 411 TM); and
 - (g) a solvent (components L and M: 2-butanone / propyleneglycol monomethyl ether).
- The radiation-sensitive composition of example 8 does not comprise a metallocene.

The subject-matter of claim 1 only differs from this known radiation-sensitive composition

in that the sensitizer (b) is selected from (i) a 1,4-dihydropyridine derivative of formula (I) and (ii) an oxazole compound of formula (II).

The problem to be solved by the present invention may be regarded as the provision of an alternative to the radiation-sensitive composition of D1.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

1,4-dihydropyridine derivatives of formula (I) are described in document DD 287 796 A (D2) as providing the same advantages as in the present application (see claim 1; and page 2, paragraph "Ziel der Erfindung"): These compounds sensitize the photopolymerisable materials of D2 in the 310-420 nm range, said materials being used for producing printing plate precursors. The skilled person would therefore regard it as a normal option to include these 1,4-dihydropyridine sensitizers in the radiation-sensitive composition described in document D1 in order to solve the problem posed.

Dependent claims 2-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows: The features comprised in these claims either are disclosed in D1 or are conventional for the skilled person.

The process for the production of a radiation-sensitive element comprising the radiation-sensitive composition of claim 1 (subject-matter of present claims 14-19), and the use of said radiation-sensitive composition for producing a lithographic printing plate precursor (subject-matter of present claim 20) cannot be considered as involving an inventive step in the light of D1 and D2 (see example 8 in D1; and claim 1 in D2).

Re Item VII

Certain defects in the international application

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified

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International application No.

PCT/EP2004/013138

therein.